

Kitchen garden of all manner of herbes, rootes, and fruites, for meate or sause used with us, and An Orchard of all sorte of fruit-bearing Trees and shrubbes fit for our Land together With the right ordering, planting and preserving of them and their uses and virtues. Collected by John Parkinson, Apothecary of London, 1629." It will be observed that the first five words mean "of Park-in-Sun the Earthly Paradise," and this play upon his own name is missed in the special title of the reprint.

It is impossible even to indicate the charm of this old book; a long notice would still be inadequate, while to those who love old garden flowers and these quaint notices of them, this reprint will afford a new delight.

B. D. J.

### MODERN ELECTRIC PRACTICE.

*Modern Electric Practice.* Edited by Magnus Maclean. In six volumes. Vol. i., pp. viii+270. Vol. ii., pp. vi+297. Vol. iii., pp. vi+285. (London: The Gresham Publishing Co., 1904.) Price 9s. net per volume.

THESE volumes have been published with the intention of providing a comprehensive treatise on the subject of modern electrical engineering, a subject now so large and so diversified that it is beyond the power of one man, however expert, to deal with it in all its aspects. The plan has therefore been adopted of inviting the collaboration of a number of authors, each writing of that section with which he is particularly conversant, and thus producing a sort of encyclopædia of electrical engineering which might be compared with such books as Watts's "Dictionary of Chemistry." It is difficult to form an estimate of the value of a book of this kind, which depends as much upon the skill and discretion which are shown in the selection and arrangement of the material as upon the merits possessed by the individual contributions.

Regarded as a whole we consider this compilation disappointing in the extreme. A really standard work of reference on electrical engineering would be a very welcome addition to electrical literature, a book to which a man could turn for information about any matter which happened to crop up in the course of his work, certain of finding a thorough *résumé* of the subject sufficient to give him the outlines of existing knowledge and to put him on the track of more detailed information if he required it. The volumes before us unfortunately cannot claim any such position; indeed, as a work of general reference they are almost useless. A series of text-books by different writers on different subjects does not make a comprehensive treatise because these text-books are bound between the same covers and "not sold separately." No serious effort seems to have been made to coordinate the material properly, and, in fact, almost the only attempt at uniformity which can be discovered is in the direction of print and paper. A single quotation from the preface is enough in itself to support this contention; the editor there says, "rises of temperature are given sometimes in degrees Fahrenheit and sometimes

in degrees Centigrade; dimensions of machines occasionally in feet and inches but more often in centimetres; magnetic flux density in lines per square inch in one article, and in lines per square centimetre in another." We can see no way in which to regard this paragraph other than as a confession of careless editing, as we should have thought the very first thing the editor would do would be to adopt a uniform system of units and notation throughout. Other instances of more serious carelessness might be quoted, but we will content ourselves by giving one example. In the three volumes already published we have come across two tables giving the relative conductivities and temperature coefficients of various substances; in one the values of the resistivities are given, in the other the relative conductivities. A very cursory examination shows that the two tables do not agree, and if they are compared more carefully we get results of which the following are specimens (the conductivity of iron being taken as the standard for comparing the two tables):—

Relative conductivity of iron		Table I. 16.2	Table II. 16.2
"	copper	97.5	90 & 92
"	mercury	1.65	1.56
"	platinum	19.0	13.4
"	aluminium	52	55

The agreement between the temperature coefficients is equally bad. We have purposely only compared above the figures for elementary substances, as those for alloys such as German silver, manganin, &c., which are in even worse disagreement, are valueless in one table as the percentage composition is not given. Comment on figures of this sort is needless.

Enough has probably been said to show that as a standard treatise on electrical engineering the value of these volumes is little or nothing. This is the more to be regretted as they have been produced in a style which may be described as lavish, and several of the contributors are in the front ranks of the profession, able to write with an authority on their particular subjects which cannot be called in question. It would not have required very much more trouble and care to have converted the publication into a first-class addition to the electrical engineer's library instead of leaving it as a book only to be valued on account of the occasional articles of exceptional merit which it contains. Space would not permit us to review these in detail here even were it profitable to do so. Suffice it to say that there are several contributions which thoroughly deserve to be read, some because of the admirable way in which they treat their subject-matter, and others because, in addition, they are practically the only existing English text-books on the subject. On the whole, however, we think the level is not very high, especially if scientific treatment be looked for; there is a general tendency for too much description, too much of an account of what the practical engineer has made, and too little of the theoretical principles on which his practice is based. It is evident, of course, that the book does not aim at discussing the theoretical side of electricity and magnetism, but even "modern practice" must be studied, if it is to be properly studied, with a certain

amount of theory as a basis, and a book which does not supply, in each branch, the necessary minimum hardly deserves to claim the title of a "comprehensive treatise."

MAURICE SOLOMON.

### PIONEER IRRIGATION.

*Pioneer Irrigation for Farmers in the Colonies.* By E. O. Mawson, M.Inst.C.E. With Chapters on Light Railways, by E. R. Calthrop, M.Inst.C.E. Pp. xvi+260. (London: Crosby Lockwood and Son, 1904.)

THE preface states that "this book has been written with the object of supplying pioneer farmers, in arid countries, with information which may assist them in conserving the precarious rainfall, and utilising it for the irrigation of crops"; also that "only the most homely contrivances, such as can be constructed and worked without professional advice or skilled labour are suggested"; and that the object "throughout the volume has been to demonstrate, in the simplest possible manner, how the available water-supply—whether surface-flow or underground—can be used for irrigating crops by means of works easily constructed at a small expenditure, without fear of danger in case of failure." The book, however, is not in reality confined within these prescribed limits; for it refers to earthen dams, with puddle trench, waste weir, and outlet valve tower, masonry dams of moderate height for forming reservoirs in gorges, a masonry aqueduct of several spans, and a barrage or weir across an apparently wide river, closed along the upper portion by a series of automatic sluice-gates. The works, indeed, shown in some of the woodcuts, and especially on plates 3 to 8, 10, and 19, could not possibly be regarded as homely contrivances, capable of being easily carried out by pioneer farmers, without skilled labour, at a small cost, and without danger to the neighbourhood in the event of failure.

The chapters on the value of irrigation and sources of water-supply, underground waters, methods of irrigation, and the cultivation of irrigated crops, vegetables, and fruit trees, contain much information which would be very useful to persons engaged in the cultivation of arid districts; but most of the works described in the chapters on dams and weirs, canals, sewage irrigation, and automatic sluice-gates, would be wholly beyond the resources of pioneer farmers. The storage of rainfall, the collection of the run-off of water in the rainy season by open tanks formed in depressions enclosed by low banks, and the drawing of underground waters from wells, are works which can be readily undertaken with great benefit by cultivators of arid lands; but the formation of large reservoirs by damming up valleys, and the raising of the water level of rivers and the conveyance of the water considerable distances in irrigation canals, constitute works which have to be carried out by a company, the local authorities, or the Government, for the irrigation of large tracts of land. Sewage irrigation, moreover, can only be made use of in the neighbourhood of large communities, and is not available amongst the sparse population of a newly-settled agricultural district.

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In a chapter on automatic sluice-gates, a system of hinged gates or shutters is advocated for raising the water level of reservoirs and rivers, which has apparently been patented by one of the authors; but it is not stated that the design has been put into operation; and such automatic contrivances, as in the case of the movable shutter weirs employed long ago for the canalisation of some rivers in France, are liable to be very irregular in their action. The two concluding chapters furnish some interesting particulars about light railways, which are introduced with the view that the conveyance of the produce of irrigated lands to a market is second only in importance to the supply of water. Such works, however, with the great advantages that they afford, have to be carried out in the midst of a thriving community, where both capital and revenue are available; and they are beyond the scope of pioneer farmers who are extending cultivation into new, unoccupied districts. A long appendix is given at the end of the volume, containing various memoranda, tables, and particulars about materials and tools, which may be of service in irrigation works and farming. The book is, in fact, a short manual on irrigation works in general, with some account of the construction, suitable gauges, and rolling-stock of light railways.

### OUR BOOK SHELF.

*Lehrbuch der Stereochemie.* By A. Werner. Pp. xvi+474. (Jena: Gustav Fischer, 1904.) Price 10 marks.

THIS book had its origin in the courses of lectures on stereochemistry delivered during recent years by Prof. Werner in the University of Zurich. The systematic form of the lectures has been adhered to, but by the addition of numerous tables and many hundreds of references to original sources, the author has produced a comprehensive handbook which must prove of great utility, not only to the general chemist who wishes to know something of the advances made in stereochemistry since the conception was first put forward, but also to the specialist whose work is directly concerned with the subject. Notwithstanding the wealth of detail, the book is of moderate compass, and whilst compression in the theoretical portions is occasionally carried to such an extent as to interfere somewhat with intelligibility, yet the book is on the whole both readable and easily comprehensible. The eminence of the author as an investigator in some of the most obscure fields of stereochemical research is sufficient guarantee of his mastery of both theory and material.

The work is composed of two chief parts, of which the first deals with stereoisomerism, divided into subsections according to the elements involved. The first subsection is naturally devoted to the stereoisomeric carbon compounds, and occupies about half of the whole book. In it are treated, amongst other matters, the theory of the asymmetric carbon atom, mirror-image isomerism, racemism and the resolution of racemic compounds, determination of configuration in open chains (more particularly in the sugars and related substances) and in closed chains, the quantitative relations between rotation and the nature of the asymmetric carbon atom, *cis-trans* isomerism in cyclic compounds, and the geometric isomerism of ethylenic compounds. The